



**TACOM**

# Mortar Fire Control



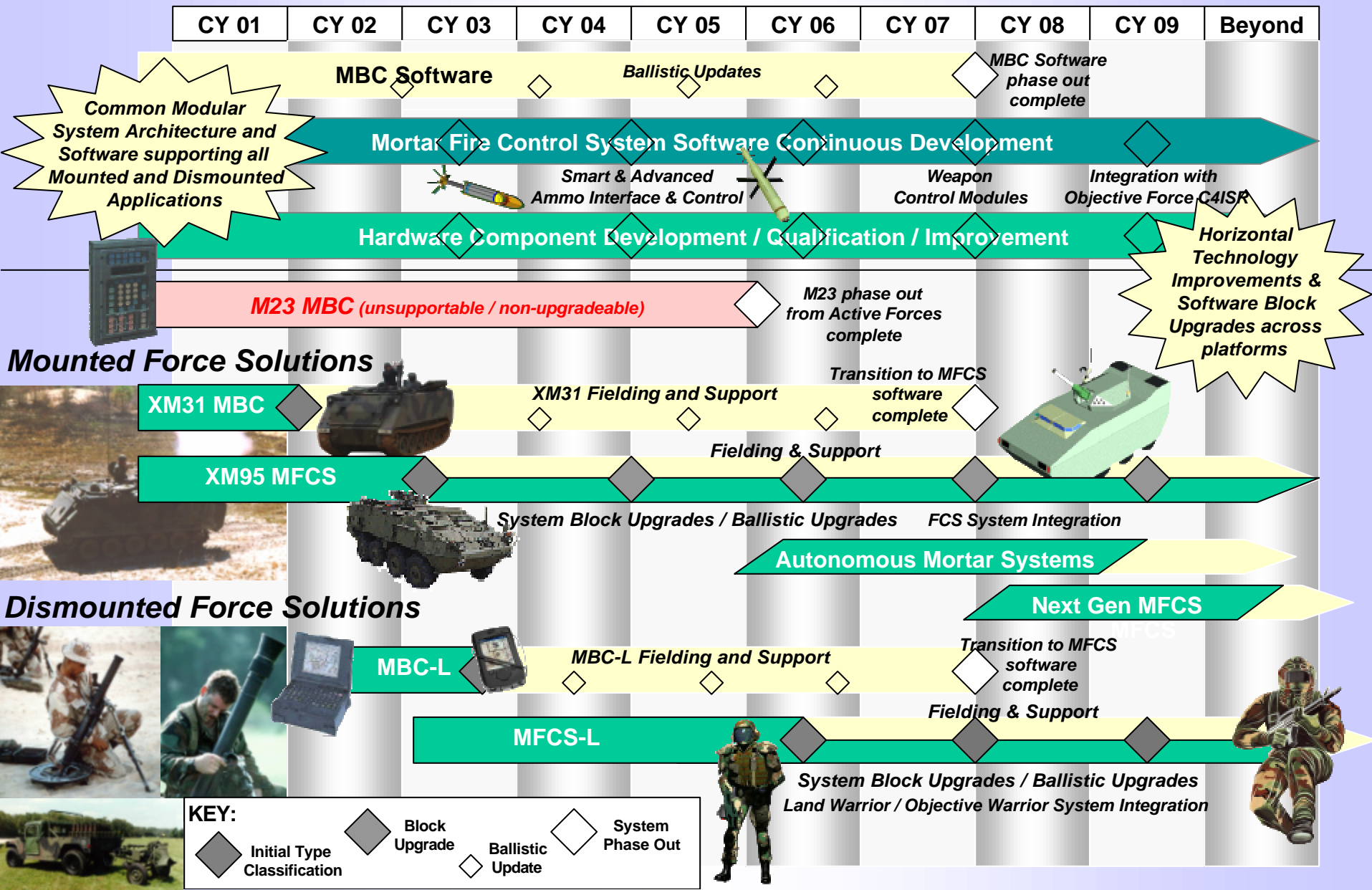
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PM Mortars

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# Mortar Fire Control Evolutionary Development



## Acquisition Strategy (ConFire)

- Provide a flexible and effective mechanism to horizontally integrate, acquire, field, improve and maintain superior Mortar Fire Control Systems.
- Consolidate several fire control programs and their technologies
  - Leverage information technology
  - Integrate program synergies
  - Optimize commonality
  - Reduce duplication in technology development efforts
  - Provide incremental growth capability to each program over time.
- ConFire allows for the award of all or some of the MFC program requirements through a single contracting vehicle.

# Mortar Fire Control System Heavy

## Gunner's Display



Displays mission information, round type, charge, and fuse type  
Used to position tube to firing elevation & azimuth

## Navigation & Pointing Devices



Measures vehicle location & tube orientation  
Sends information to CI for ballistic calculations and vehicle location (for Situational Awareness)

## Power Distribution Assembly



Regulates system power

## Digital & Voice Communications



## Commander's Interface (CI)

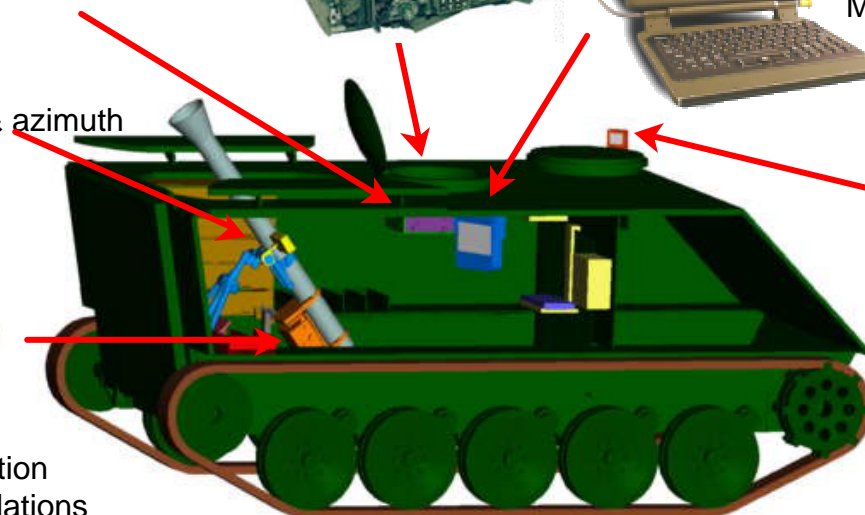


Translates digital messages into user prompts  
Calculates ballistics, records mission data  
Monitors system components

## Driver's Display



Used to "Rough Lay" vehicle to firing azimuth ( $\pm 20$  mils)



## Increased Mortar ...

- **Accuracy:** 60m CEP (current is 230m)
- **Survivability:** No Dismount, Aiming Circle or Aiming Stakes; Dispersed emplacement (beyond line of sight)
- **Responsiveness:** First Round out < 1 minute (current is 8-12 min.)
- **Command & Control:** Digitally Linked to AFATDS

Does for Mortars what BCS & Paladin did for Artillery

FDC Vehicle (M577) not shown

# MFCS V1 Capabilities

## Shoot

- Grid, Polar, Shift (digital & voice)
- Adjust Fire, Fire For Effect, Immediate Suppression, Immediate Smoke
- Precision Registration
- At My Command, When Ready
- 6 Simultaneous Missions
- Final Protective Fires, Priority Target
- Fratricide Checks
- Check Fire
- Single Safety Fan
- Meteorological

## Move

- Single Waypoint
- “Steer to” Aid (Gun)

## C2

- Digital
- AFATDS
- VMF

# MFCS Software

- Developed in-house at TACOM-ARDEC
  - Team of 9 software developers and 6 software testers, Co-located
  - Capability Maturity Model Integrated (CMMI) Level 3 Certified
- Architecture consists of 4 Computer Software Components
  - Mission Manager including Mortar Ballistic Kernel
  - Gunner-Driver Display
  - Communications Network
  - Soldier Machine Interface

**MFCS-H is a Software Block I Core System**

# Future MFCS Software Functionality

## Version II

Version 2, Sept 2001 - Nov 2002

- Fire Support Coordination Measures (FSCMs)
- Digital Plotting
- Light Weapon Systems (60, 81, and remaining 120 mm mortars)
- Force XXI Battle Command Brigade & Below (FBCB2)
- New Ballistic Kernel (adds new rounds)
- Gun as FDC
- Zeroize System Data
- Ballistic Kernel Update (adds BCT)

## Version III

Version 3, Feb 2003 - Jan 2004

- Joint Variable Message Format (JVMF)
- Light pointing device at gun
- Ballistic Kernel Updates (M930, M983, M769)

## Version IV

Version 4, Feb 2004 – Jan 2005

- Mean Point of Impact (MPI) Registration
- Individual Gun Registrations
- Multiple Safety Fans
- Ballistic Kernel Updates (M768, M720E1, PGMM)

## Version V

Version 5, Feb 2005 – Nov 2006

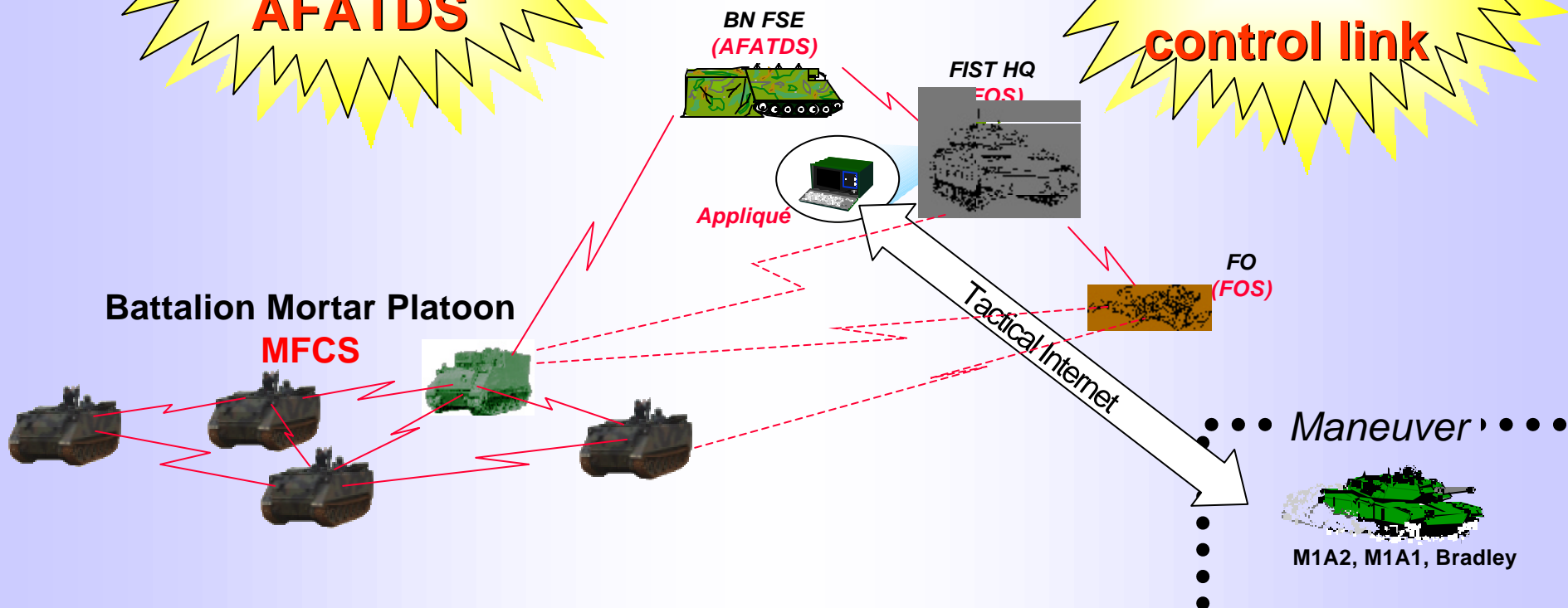
- Search and Traverse
- Laser Polar Missions
- Ballistic Kernel Updates (M934A1E1, XM784, XM785)



# MFCS' Links Into the Digital Fire Support Fight

**Fully Links  
Mortars into  
AFATDS**

**Allows direct  
Sensor-Shooter  
control link**



AFATDS - Advanced Field Artillery Tactical Data System

AFCS - Automated Fire Control System

BCS - Battery Computer System

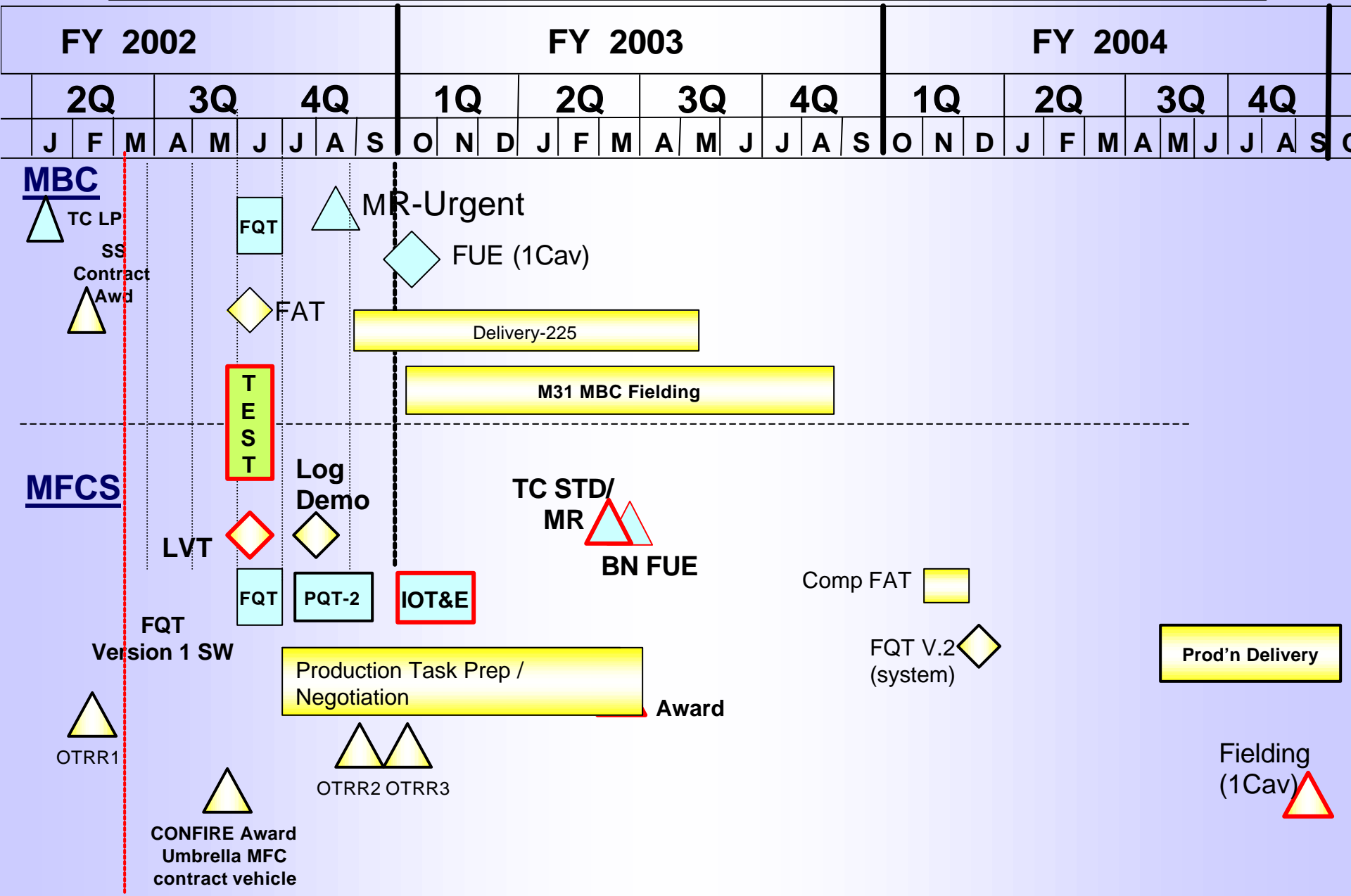
FIST - Fire Support Team

FOS - Forward Observer System

MFCS - Mortar Fire Control System



# MFCS Schedule



# Summary

- Mortar Fire Control *significantly enhances* Mortar **capability** and **responsiveness**.
- Integrates Mortars into the **Fire Support Net** (Version 1) and **Situational Awareness Net** (Version 2)
- SW modularity applicable to **future platforms**

Mortars are an important part of the digital battlefield  
- Today and Tomorrow